

Materials Testing Department

Plastics, Rubber & Coatings Laboratory

# TEST REPORT

Number: [REDACTED]

Date: 27.05.2021

Subject: **Material tests**

Ordered by: **NORDFIL LLC**

/Name and address/

19th Line VO, House 32, Building 3, liter 1  
St. Petersburg, 199106  
RUSSIA

ORDER		TESTING	
Number	Date	Commenced	Completed
email	18.05.2021	03.05.2021	14.05.2021

Written by:

[REDACTED]  
/First name, last name/

[Signature]  
/Signature/

Authorized by:

[REDACTED]  
/First name, last name/

[Signature]  
/Signature/

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[www.nordfil.ru](http://www.nordfil.ru)

Report contains:

4 pages

CHECKED BY:

27.05.2021  
KIEROWNIK ZAKŁADU  
Materiałoznawstwa  
dr inż. Krzysztof Brodzik  
/Stamp, Date, Signature/



Report to:

Report to:			
N° 1	Customer	N° 7	
N° 2	[REDACTED]	N° 8	
N° 3	[REDACTED]	N° 9	
N° 4		N° 10	
N° 5		N° 11	
N° 6		N° 12	

## 1. DESCRIPTION AND IDENTIFICATION OF TESTED ITEM

### Cabin filter (Fig.1)

Quantity: 10 pcs ~(100x356x0.7 mm)  
 6 pcs Ø80 mm x thickness ~0.7 mm

Delivered by Customer: 27.04.2021

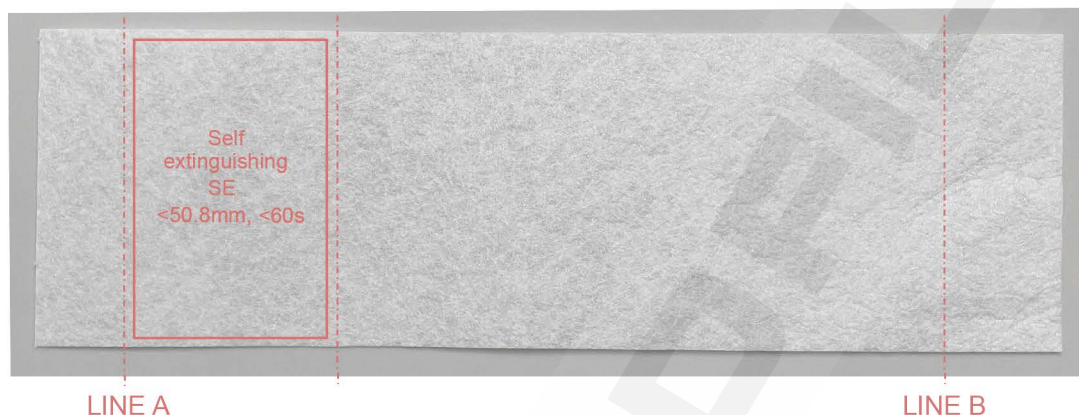


Fig. 1 View of tested sample with marked lines A,B and area indicate as Self-extinguishing (SE), according to standard NES M0094:2018

## 2. RANGE OF THE TEST

### 2.1 Flammability Test according to NES M0094:2018

- At delivery state
- After aging: 168 h / 80°C; conditioning after aging: 24 h / 21±2, 50±5 % RH

### 2.2 Fogging Test according to RENAULT D45 1727--H:2017 for compliance with Customer requirements

## 3. TEST DESCRIPTION AND RESULTS

### 3.1 Specification of test and measurement apparatus and computer programs

#### Testing and measuring apparatus:

X/1412/BMT - climatic chamber MEMMERT	calibration 07.2020, next calibration 07.2021
L/1324/BMT - thermo-hygrometer	calibration 09.2019, next calibration 09.2021
A/0919/KPW - slide caliper	calibration 01.2021, next calibration 01.2023
X/1169/BMT - combustion chamber WAZAU BKF	calibration 10.2019, next calibration 10.2024
E/1323/BMT - electronic stop watch	calibration 09.2019, next calibration 09.2021
A/1143/BMT - slide caliper	calibration 10.2020, next calibration 10.2022
X/1426/BMT - temperature chamber	calibration 05.2020, next calibration 05.2021
X/1422/BMT - fogging tester Haake PC 200+A10 with SC100	calibration 01.2021, next calibration 01.2022
B/1415/BMT - analytic balance	calibration 09.2018, next calibration 09.2021
J/1451/BMT - micro-Tri-gloss BYK 20°/60°/85°	calibration 06.2020, next calibration 06.2021

### 3.2 Flammability Test

10 samples: 1...10; ~(100 x 356 x ~0.7mm),

1...5 – flammability test at delivery state

6...10 – flammability test after aging

- Test have been performed without wire support

Temperature and Relative humidity during test samples preconditioning:

Temperature: Max. 21.1 °C; Min. 20.9 °C

Humidity: Max. 50.1 %; Min. 49.9 %

Preconditioning time: 24 h

- Test atmosphere during performed test:

Temperature: Max. 21.5 °C; Min. 21.2 °C

Humidity: Max. 45.8 %; Min. 45.5 %

Results of the test are shown in the table 1

Table 1

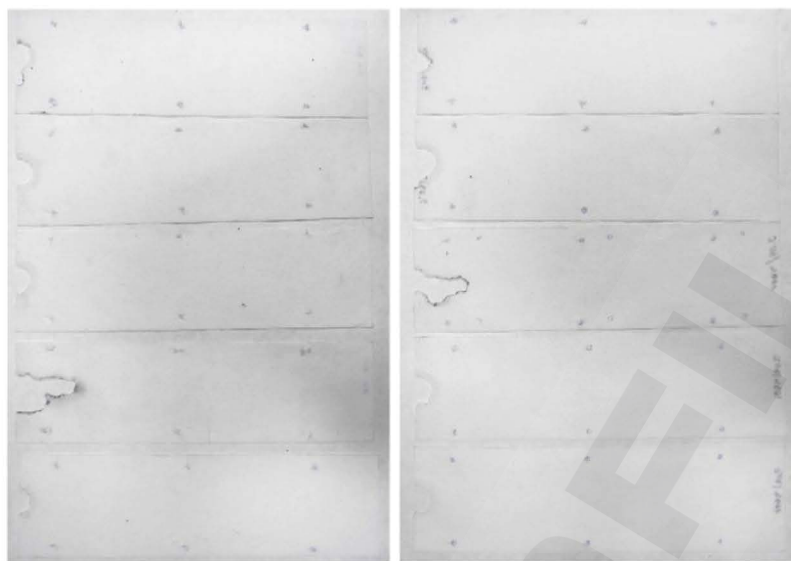
Test Sample Number	Requirements [mm/min]	Measurement Results			Conformity statement <sup>(1)</sup>		
		Length of burnt portion [mm]	Burning time [s]	Burn rate [mm/min]			
At delivery state, conditioning: 24 h / 21±2°C / 50±5 %RH							
sample 1	< 100 or SE, 0	0	0	0 <sup>(2)</sup>	OK		
sample 2		0	0	0 <sup>(2)</sup>			
sample 3		0	0	0 <sup>(2)</sup>			
sample 4		< 50.8	< 60	SE <sup>(3)</sup>			
sample 5		0	0	0 <sup>(2)</sup>			
Maximum value of Burn Rate		-	-	-			
Standard deviation		-	-	-			
Statistical Burn rate (Vstat)		-	-	-			
After 168 h / 80 ± 2°C + 24 h / 21±2°C / 50±5 %RH							
sample 6		< 100 or SE, 0	0	0		0 <sup>(2)</sup>	OK
sample 7	0		0	0 <sup>(2)</sup>			
sample 8	< 50.8		< 60	SE <sup>(3)</sup>			
sample 9	0		0	0 <sup>(2)</sup>			
sample 10	0		0	0 <sup>(2)</sup>			
Maximum value of Burn Rate	-		-	-			
Standard deviation	-		-	-			
Statistical Burn rate (Vstat)	-		-	-			

NOTES:

<sup>(1)</sup> Conformity statement is based on Simple Acceptance Rule (according to ISO/IEC Guide 98-4 and ILAC -G8:09/2019).

<sup>(2)</sup> The test sample is not ignited.

<sup>(3)</sup> The flame terminates spontaneously within 50.8 mm after marked line A and when the elapsed time is less than 60s. The flame reaches the line A before the extinction of the burner



at delivery state

after aging

Fig. 2 View of samples after Flammability Test

### 3.5 Fogging Test - reflectometric method (angle 60°)

3 samples:  $\varnothing 80 \pm 1$  mm (thickness: 0.7 mm) – Fig. 3

pre-conditioning: 24 h /  $23 \pm 2^\circ\text{C}$  in desiccator with silicagel

3 h  $\pm$  5 min /  $90 \pm 0.5^\circ\text{C}$  heating and  $21 \pm 0.5^\circ\text{C}$  cooling plate

post-conditioning: 24 h  $\pm$  1 h /  $23 \pm 2^\circ\text{C}$  /  $50 \pm 5$  %RH

Results of the test are shown in the table 2

Table 2

Type of test		Customer Requirements	Measurement Results	Conformity statement <sup>(1)</sup>
<b>Fogging Test - reflectometric method [%]</b>				
After 24 h $\pm$ 1 h	mean value: 1...3	>85	99.6	OK
	standard deviation	< 5	0.1	
Visual assessment (after 24 h post-conditioning)		no solid or liquid residue such as film and droplet	Without visible deposits	OK

NOTE:

<sup>(1)</sup> Conformity statement is based on Simple Acceptance Rule (according to ISO/IEC Guide 98-4 and ILAC -G8:09/2019)



Fig. 3 View of tested sample